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VOL. V.—No. XII.

TORONTO AND MONTREAL, CANADA, DECEMBER, 1892.

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Contributions of technical value to the persons in whose interests this journal is published, are cordially invited. Subscribers are also requested to forward newspaper clippings or written items of interest from their respective localities.

The "Canadian Architect and Builder" is the official paper of the Architectural Associations of Ontario and Quebec.

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VOL. VI.

To mark the commencement of the sixth year of publication, the January number of the CANADIAN ARCHITECT AND BUILDER will be of special character. A number of kind friends have consented to assist in its production, and a satisfactory result is looked for.

Besides features of special interest, this number will show a considerable increase in size, and in the number of illustrations, while the copies to be printed will largely exceed those of ordinary editions.

During 1893 every effort will be made to maintain the steady improvement which has marked the history of this journal in the past. We invite the kind assistance of every reader for this object, while at the same time returning our thanks for favors past, and wishing each and all a Merry Christmas and a Happy New Year.

THE Council of the Ontario Association of architects have made several attempts to procure a suitable design for an Association Seal and have at last chosen the one which we illustrate in the present number. This design which was unsigned, as were all the others submitted, is the work of Mr. Edmund Burke. The Council were greatly surprised when they discovered the author to be one of their number.

THE Registrar of the Ontario Association of Architects has sent cards to all the members requesting suggestions regarding matters of interest which should come up for consideration at the forthcoming convention in February. The members are also asked to contribute papers for the occasion. The Council is very anxious to introduce some new men and features into the next convention, and have to rely upon the members both for their help and attendance to make the meetings a success.

A SERIOUS omission in the new scaffold by-law is the failure to regulate for the use of derricks. Not only are the workmen in continual danger from the use of derricks, but the public also. Here was an opportunity to introduce into the by-laws of the city clauses by which all might be protected from the dangers of these great beams which stretch out far beyond the boardings that are supposed to protect the public. Several accidents occurred from the breaking of derricks during the past season, but we are apparently very slow to learn the lesson which such occurrences teach. The lives of hundreds of foot passengers are endangered by the raising of tons of material from the road by means of the heavy beam, supposed to be substantially built and upheld, and swinging across the sidewalks. It is alarming to contemplate what might be the extent of the calamity if a rope gave way or the beam broke, and there is sufficient precedent to make us careful.

THE cold weather compels attention to the heating apparatus. Now the landlord complains of the large amount of coal required at the boiler, while the tenants complain of the small amount of heat at the radiator. The best designed and most perfectly constructed apparatus will not heat the building unless it be attended to. Coal is put in the furnace to be burned, but when it is put on top of the bridge wall or on the dead plate just inside the furnace door its burning will not do much good. The making of fire under a steam heating boiler requires experience and skill. The method of employing the man who will shovel the most coal for the least money is a mistaken one. It gives satis-

faction to none of those concerned, unless the coal dealer. It will pay owners of steam heating plants to employ competent men and pay them according to results. As a rule it will be found cheaper to keep a large building warm all night as well as all day, than to let it cool down at night, and a skillful fireman can arrange his fire so that for six or eight hours after he has left it the boiler will still make vapor enough to keep the radiators warm.

A MONEY by-law will be submitted to a vote of Toronto property owners on the 29th inst. for the purpose of raising \$57,000 for Public School accommodation. The estimates of the School Board for building purposes in the last two years have been entirely struck out by the City Council. This action of the Council has certainly not worked out in the interests of the ratepayers, as will be seen from the fact that the Public School Board is using twenty-five rented rooms at a cost of about \$6,000 per annum, or more than twice the amount of the interest on the money which the Board is asking for. In any case this condition cannot be remedied for at least a year, and if the by-law is defeated it will probably continue and grow worse for two or three years to come. We should be slow to believe that the Public School Board is so incompetent as to incur this large expense for rent without sufficient reason, and unless it can be shown that this is the case, the money to provide increased accommodation should be voted.

IN another part of this issue we publish a report of the second annual meeting of the British Columbia Institute of Architects, an association that has been in existence for about eighteen months, and which, like kindred associations, was formed for the purpose of improving the standing of the profession. At present this Institute is incorporated simply as a Literary Society, but means for its incorporation as a distinct professional association are under the consideration of the Council. The Institute has been active in the matter of the proper conduct of competitions, and we are glad to find that its efforts have met with a fair amount of success. It is gratifying to see how architects in various parts of the world are "taking up the cudgels" against the preposterous treatment that is everywhere meted out to the profession. Every new association formed for this purpose strengthens the hands of the individual architect wherever he may be situated, and we would strongly urge all architects wherever possible to lose no time in associating themselves together not merely for their own good, but for the benefit of the public, for the real result of such societies is *pro bono publico*, and affects them in a more important manner than it does the architects themselves.

ONE very striking difference exists between Montreal and Toronto as cities and in which Montreal has an immense advantage over Toronto. Toronto is so spread out and straggling that a heavy and continual expense is incurred in making and keeping up the roads, with water supply and police protection and other items altogether out of proportion. One of the results of this spreading out is that many an acre within the boundaries is left without an inhabitant, and while the suburbs still grow the city proper is at a standstill. Montreal is so compact, that an effort is now being made to attract the people to the suburbs. The policy of spreading out, as has been done at Toronto, has proved an expensive one, and is entirely due to speculators and wire pulling, the result being that the few speculators have gained at the expense of the public. It is high time Montreal spread a little, for the population is closely packed. The system of "tenements" (houses of four floors, two floors is a tenement with separate entrances) that prevails even in the best localities, disguises the fact of the overcrowding from the casual observer. But while the plan may seem to lessen taxation, rents are very high, the majority of tenement tenants paying far more for their two floors than people in Toronto pay for a "self contained" home and bit of garden. Consequently the attempts to populate the suburbs there ought to be easily carried out.

THE verdict given at the recent Toronto Assizes in the case of the Citizens Milling Co., Ashdown, Page and Webb against Defoe, was only what must have been expected, judging from similar cases before the English Courts. The building owned

by the defendant, in which was stored merchandise and other property of the plaintiff, suddenly collapsed in February last, and the owner was sued for the value of the goods. The plea of the defendant was that the cause of the failure of the building was *dry rot*—unavoidable, and therefore he was not responsible. It has been held, however, in England, that the owner is responsible for the condition of his building as far as the purposes to which it is put are concerned, and that he should have ascertained by careful examination that all timbers were sound and capable of bearing the weight put upon them. In cases where the owner of a building that he wishes to use for a special purpose, has employed an architect to examine it for him, and the architect has certified that it was sound enough for that purpose, the owner has been able to recover from the architect in the event of subsequent failure. An architect is required to examine into the *hidden* parts, and it is generally a very risky thing for him to saddle himself with the responsibility of the soundness of construction unless he has been personally acquainted with the details from foundation to roof. In the present case the amount sued for is about \$6,500.

Despite all that has been said and done with regard to architectural competitions the Corporation of Toronto has not yet learned that architects who have any respect for themselves will not send in plans unless a guarantee is given that the competition will be carried out in a proper manner. Suggestions for the conduct of such competitions have been drawn up in order to guide promoters, that they may be able to secure the best designs and work for the object in view. The notice given by the Markets and License Committee that they are desirous of receiving suggestions for the proposed enlargement of the Toronto Market show how absolutely at sea the Committee is. These gentlemen do not know how best to effect their purpose, and instead of employing some one as their consulting architect, they ask all architects to send whatever they like in any shape they choose, and the Committee, without any professional advice, will select the scheme that seems to them best. \$1,000 of ratepayers' money is to be the award for the three best plans, which are to become the property of the Committee. This is but throwing away \$1,000, for none but the very needy or youthful architects would have anything to do with such a competition. Again, this Committee may be entirely changed in a fortnight's time at the civic elections, and the new Committee may not be willing to carry out the ideas of their predecessors. Such things have happened before, and the probability is that anyone who did send in a plan would have all his trouble for nothing. Nearly seven months have been given for the preparation of schemes, and this will prove just so much lost time, for we feel confident that not one plan of any merit will be found waiting for the Committee to meet at the end of the seven months.

THE novel sight of a brigade of axe men engaged in chopping down poles erected by the Street Railway Company has lately been witnessed on the streets of Toronto. The City Engineer's action in ordering this to be done seems justifiable. The agreement which the Street Railway Company entered into with the city provides that the character of the construction and equipment of the system shall be subject to the approval of the City Engineer. The Company has lately acted as though its intention was to evade as far as possible compliance with this agreement. It has erected poles which would disgrace the streets of a backwoods village, and has accentuated their native ugliness by painting them a variety of colors. In many cases a brilliant red is the prevailing hue. There seems to be manifest in the Company's dealings with the city as well as with private corporations and individuals a disregard for the rights of others as well as its own promises. To get possession of what it wants now under promise of remedying in the future what is below the standard, seems to be the policy pursued. Whatever the other party to the contract may do, the Company appears to have always in mind the fact that "possession is nine points of the law." If the company intends to continue to own and operate the road, it is making a huge mistake by antagonizing public favor, and even if, as is asserted, its intention is to dispose of the franchise, the fact of its being at loggerheads with everybody must tend to lower the value of the privilege in the

eyes of intending purchasers. We refer to this matter because such conduct is calculated to increase the prejudice against which promoters of electric railways have had to contend, and thus to retard development.

IF we were asked to give a word of advice to the builder that should be of the greatest possible value to him we should say "Get acquainted with men in your own business, especially those who are frequently competing against you." We have in mind nothing of the nature of a "combine" or even of anything approaching an agreement that should affect prices. Such a proceeding in the building trade would be worse than useless, for if such an agreement as to prices were made, those who wanted to build would be driven to other places to get their work executed. But leaving out entirely the question of prices, there is a very decided advantage in men in the same business being well acquainted, because it destroys to a great extent unbusinesslike competition and encourages a healthy system in its place. There are other advantages, one of which may be given as an example. A man desirous of building a house invites bids from three or four builders. When the estimates are received he at once goes to Mr. Jones who is the lowest bidder and talks to him something like this: "Mr. Jones, you know very well that I would rather you should build that house for me than anyone else, because I know that you will do an honest job"—and so on, with as much of similar talk as he thinks poor Jones will stand. "Now Jones, you see you are not the lowest bidder—in fact there are two above you, but if you can see your way to take off something you shall have the job." Jones reasons that if the other builders can do the work for a lower price than his bid, *he* can, so he takes off a hundred dollars or so, with the result that he either loses on the transaction or comes pretty close to doing so. Now, had Jones been on good terms with the other builders, he could easily have found out whether he was really the lowest bidder or not, and the little "confidence game" that is as a fact carried on every day, would not have succeeded.

WE understand that the Council of the O. A. A. has decided upon holding the next annual convention in February, the opening day being the 7th inst. We have not as yet seen any programme of the meetings but we have no doubt one will be arranged that will be equally attractive to both town and country members. The last two conventions were very unfortunate as regards the weather, so much so that going about town was to be avoided as much as possible. It is at any rate to be hoped that the coming convention may be more fortunate in this respect, and if this could be foreseen, we feel sure that the Council could not include anything in their programme of greater interest and practical importance than visits of the whole body to some at least of the many large buildings that the city architects may at the time have in charge. This would be a feature that would commend itself very favorably to the country members, and at the same time an opportunity would be afforded to city members to see buildings they cannot help being interested in, but which from a variety of causes they have hitherto not visited. By making an early start, say between 8 and 9, one morning, a good many buildings might be seen, and more would be accomplished at the convention than if, as is generally the case, the meetings cannot be called to order till nearly eleven o'clock. We venture to suggest that one reason why members have proved themselves so lacking in punctuality in attending the sessions is that the country members at any rate have been trying to see as much for themselves of the city and some of the larger works as they possibly could during the hours of recess. No doubt there is a great deal of interesting matter read and discussed, but it is a question whether this should occupy all the time. Judging from the interest taken by all who met last year, in the visit to the Children's Hospital, visits to the Court House, new Drill Hall and some of the Banks already completed would meet with general approval.

AN extraordinary and dangerous move is being made to have the work on the Toronto Court House carried out by day labor. The public need to be put on their guard against such an innovation for they perhaps hardly understand the full importance of the move. Not merely is it an injustice to the taxpayers as affecting their pockets, but it is utterly impossible that a build-

ing of the size, quality and character of the Court House should be successfully and properly completed in the manner proposed. Day labor is all very well for works of a rough description, such as road making or drain laying, but the intricacies of a large building entail an amount of responsibility that we should imagine the architect and clerk of works would be very unwilling to shoulder. For two men, however skillful they may be, to undertake the superintendence of the details of ten or a dozen different trades and to be responsible for the work of 200 or 300 men, is out of the question. The time of the architect (and for this purpose he is employed) should be taken up with the elaboration of his scheme, not with ordering of material and the constant looking ahead to prepare for the next piece of work to be done on the building. We do not see how an architect can give his time to all the necessary works that day labor would involve. There is another matter to be considered—every year the *personnel* of the Court House Committee is changed, and who can say whether some future committee, without the experience that the existing committee has gained, would not decide that some other method should be employed. Prices, too, vary; wages may increase; a strike may be inaugurated by the men employed; these and a score of other contingencies may possibly arise, all of which would mean delay and useless expense. We have had enough trouble over the Court House, and the taxpayers are getting restive under the continual expense of litigation. The only safe and right course to pursue is to have the work tendered on in the usual manner and carried out by responsible contractors.

ILLUSTRATIONS.

STATUE OF THE LATE RT. HON. SIR JOHN A. MACDONALD,
TO BE ERECTED IN HAMILTON, ONT.—MR. WADE,
SCULPTOR, LONDON, ENG.

HOUSES ON SYDENHAM STREET, TORONTO.—HENRY
SIMPSON, ARCHITECT.

ILLUSTRATIONS ACCOMPANYING MR. CHAS. BAILLAIRGE'S
PAPER ON "ESCAPE FROM BUILDINGS IN CASE OF
FIRE," IN THIS NUMBER.

NEW ISOLATION HOSPITAL, TORONTO.—HENRY SIMPSON,
ARCHITECT.



Edmund Burke
Arch.

ACCEPTED DESIGN FOR OFFICIAL SEAL FOR THE ONTARIO
ASSOCIATION OF ARCHITECTS.



At the first of the Club's meetings during the last month, Mr. J. Wilson Gray read a paper on the high buildings of Chicago, and the methods employed in their construction.

At the second meeting, papers on photography as applied to architecture were read by the President, Mr. A. H. Gregg, and Mr. J. J. Woolnough. These papers and the illustrations which accompanied them, will be published in a future number.

THE B. C. INSTITUTE OF ARCHITECTS.

THE above Institute, which has now been in existence about eighteen months and embraces nearly 40 members, held second annual meeting on Friday, November 4th, 1892, at Vancouver, B. C., with Mr. C. O. Wickenden, of Vancouver, Vice President, in the chair.

Minutes of the previous meeting having been read and adopted, the chairman read the following report of the year's work.

"In the absence of our President it devolves on me now to read to you the executive report of what has been done by our Institute during the past year. Since our last annual meeting held in Victoria on the fifth December, 1891, we have been duly incorporated, after taking legal advice as to the proper means to that effect, under "The Literary Societies Act." Of this you have had due intimation in the issue of our "By-laws and Declaration of Establishment." This course your Council considered advisable in order to give us a proper legal status.

The next action of your Council that I have to bring to your notice is one respecting competitions. Your Council felt it advisable to address the office of Land and Works of the Provincial Government respecting the terms of an impending competition for Government offices in Victoria. The result of this co-operation was the issue of the instructions doubtless seen by you all (correspondence read). Shortly before the competition designs were to be submitted, we again addressed the Commissioner of Lands and Works on the subject of adjudicators. Rumors of a possible reference of the designs to an architect of the United States induced us to take this action, and here again I have to congratulate you on the ready compliance of the Commissioner with our suggestions, two of our profession nominated by the Ontario Association of Architects having been appointed to assist the Commissioner in making his selection.

Most of you are aware that during the year a competition for designs for a new Christ Church Cathedral in Victoria was arranged by the plans committee of that church. The conditions of this competition were considered by your Council as unsatisfactory, and several suggested alterations in the terms were made and forwarded to the secretary of that committee. These suggestions were not favorably received by them, the consequence being that very few designs were submitted from British Columbia. In consequence of the action since taken by the committee of the new Christ Church Cathedral issuing out of this competition, your Council again thought some action was necessary, and at a Council meeting held on Saturday, Oct. 15th, a sub-committee was appointed to go over the question and report. This report was passed as a resolution of the Council at a subsequent meeting held Oct. 22nd, and a copy sent the plans committee; up to date reply has not been received from them.

These matters are referred to, to show our members to what extent matters affecting our position as architects have received our attention. Probably the most important action taken during the past year has been the attempted passage in the Local Legislature of our "Bill respecting the Profession of Architects," which, as you all know, was thrown out by the small majority of one, the time of its being voted on being late on a Saturday at the far end of the session, with a very few members present. It is a question for your consideration whether the Act should be brought up again at the next session of Parliament or not.

Your Council at a meeting held on Saturday, Oct. 22nd, passed the following resolution having reference to By-law 6: That in accordance with By-laws 1-6 the following gentlemen be invited to allow themselves to be nominated for election as honorary fellows: Messrs. F. C. Gamble, G. A. Keefer, H. B. Smith, W. S. Gore, Joseph Hunter, Edward Mohun. It remains with you now to adopt this report or not and if you have other nominations to make to add to the above.

I have to regret to add that one of your Council, Mr. Trimen, had resigned owing to continued ill health. At the Council meeting of October 15th, Mr. Day was elected to take his place (By-law 54).

Upon the report being adopted, the vote was next taken for the members of Council for the ensuing year, when the following were duly elected:

President, C. Osborn Wickenden, Vancouver.

Vice-Presidents, R. Roskell Bayne, Victoria; Cornelius J. Soule, Victoria.

Hon. Treasurer, Edward Mallandaine, Sen., Victoria.

Hon. Secretary, W. Ridgway-Wilson, Victoria.

Thomas Hooper, Victoria; John Teague, Victoria; Alan. E. McCartney, Vancouver; Richard P. Sharp, New Westminster; A. Maxwell Muir, Victoria.

The gentlemen nominated above by the Council as honorary Fellows were duly elected, as were also Messrs. S. G. Curry, of Toronto, and A. T. Taylor, of Montreal, the experts appointed by the Government in the late competition.

After some further discussion on the subject of the proposed Bill respecting the profession of architects, a committee consisting of Messrs. Soule, Bayne, and Ridgway-Wilson, with power

to add to the number, was appointed to consider what further steps should be taken in the matter and to report to the Council.

It was decided to hold the next annual meeting at Victoria, and the meeting adjourned.

GOVERNMENT BUILDINGS COMPETITION, VICTORIA, B. C.

Acting upon the suggestion of the British Columbia Institute of Architects the Council of the Ontario Association of Architects were requested by the Government to nominate two non-competing Architects to act as experts in conjunction with the Honorable the Chief Commissioner of Lands and Works in the Government Buildings competition. Accordingly Mr. S. G. Curry, President of the Ontario Association, and Mr. A. T. Taylor, F. R. I. B. A., R. C. A., a member of the Council of the Quebec Association of Architects, were appointed. After an exhaustive examination of the various designs these gentlemen handed in the following report, viz:—

VICTORIA, B. C., November 5th, 1892.

To the Honorable the Chief Commissioner of Lands and Works
Victoria, B. C.:

SIR,—In accordance with our appointment as experts to examine and advise on the plans submitted in competition for the proposed new Government Buildings, we beg to report as follows:—

Sixty-five sets of drawings have been sent in by sixty-two competitors. We have arranged and carefully examined same, and have selected the following five designs to compete in the second competition, viz:

- No. 19, "Britannicus."
- No. 56, "A. B. C. Architect."
- No. 43, "St. George on Shield."
- No. 25, "Utility and Dignity."
- No. 17, "Utile Dulci."

NOTE.—These are placed alphabetically and not in order of merit.

We have selected the above as most nearly fulfilling the conditions and requirements of the competition.

We regret that we were obliged to reject several designs of great merit on the ground that the expense of carrying them out would grossly exceed the limit of cost stated in the conditions of competition.

None of the designs submitted were entirely suitable in the internal arrangements of the several departments, owing, we think, in a great measure, to the inadequacy of the information furnished to the competitors.

We would respectfully suggest that as full information as possible of the requirements as to space, and the internal working of the several departments, be furnished to the competitors in the second competition.

We are, Sir,

Your obedient servants,

S. G. CURRY,

ANDREW T. TAYLOR.

After this report had been received, the sealed envelope bearing the *nom de plume* of each was opened and the names of the successful competitors were found to be—

"Britannicus," F. M. Garden, Chicago, U. S.

"B. C. Architect," F. M. Rattenbury, Vancouver, B. C.

"St. George on Shield," J. F. Brown, Toronto, Ont.

"Utility and Dignity," Messrs. Skillings & Corner, Boston and Seattle, U. S.

"Utile Dulci," T. C. Sorby, Victoria, B. C.

These gentlemen will be at once requested to submit a second set of designs in accordance with the terms of the competition.

The Government desire to thank the various architects who competed, and feel it is a matter for congratulation that such a large number of designs of great merit were received from which to make a selection.

W. S. GORE,

Deputy Commissioner of Lands and Works.

Lands and Works Department,
Victoria, B. C., 9th November, 1892.

OBITUARY.

Mr. Wm. Gearing, one of the best known and most highly respected builders of Toronto, died of consumption at his home in that City on the 3rd inst. Mr. Gearing was incapacitated for business for two years preceding his death. He was a native of Watlington, Oxfordshire, England, and was forty one years of age. The funeral ceremonies were very largely attended. The officers of the Toronto Builders' Exchange were present, some of them in the capacity of pall-bearers.

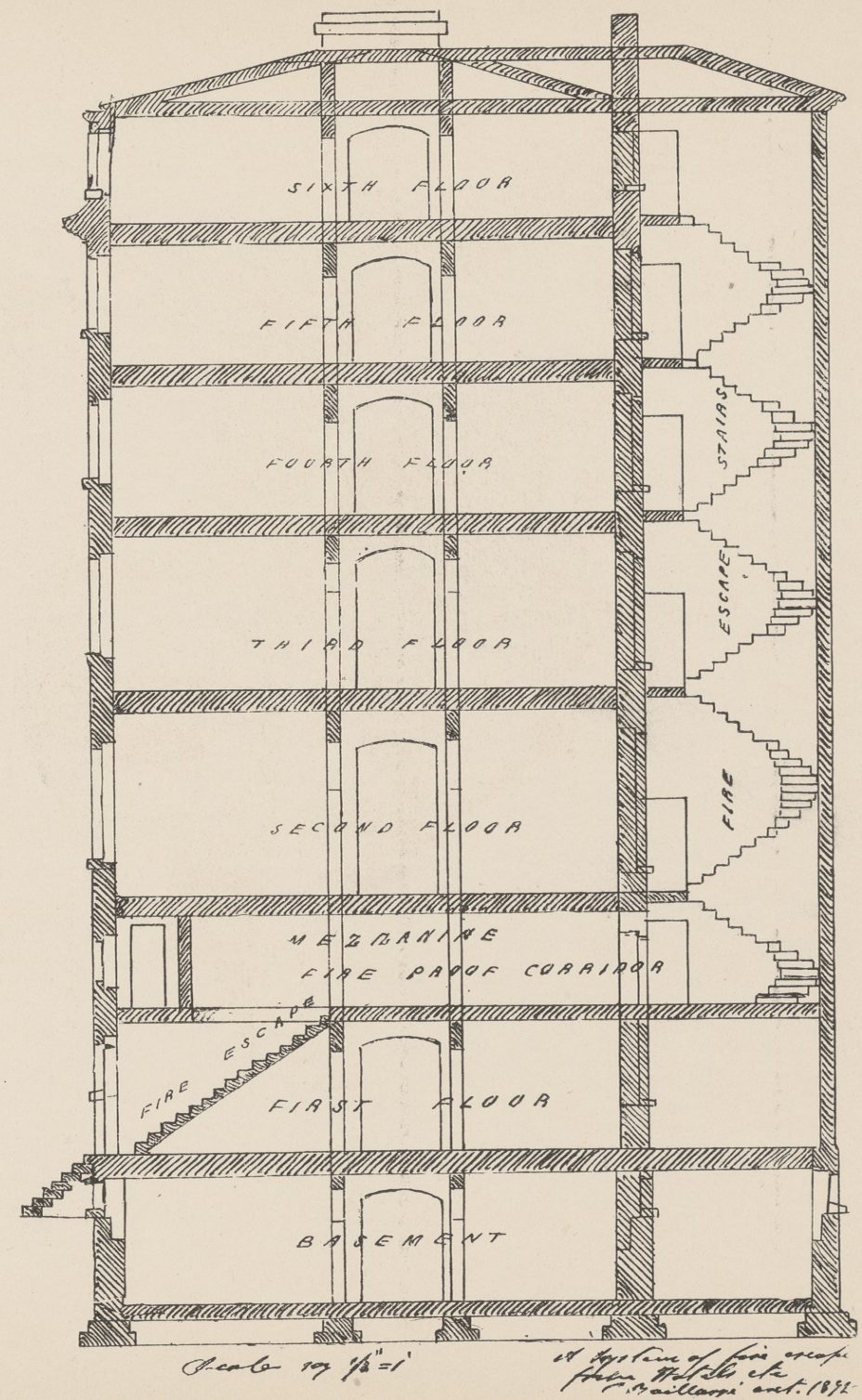
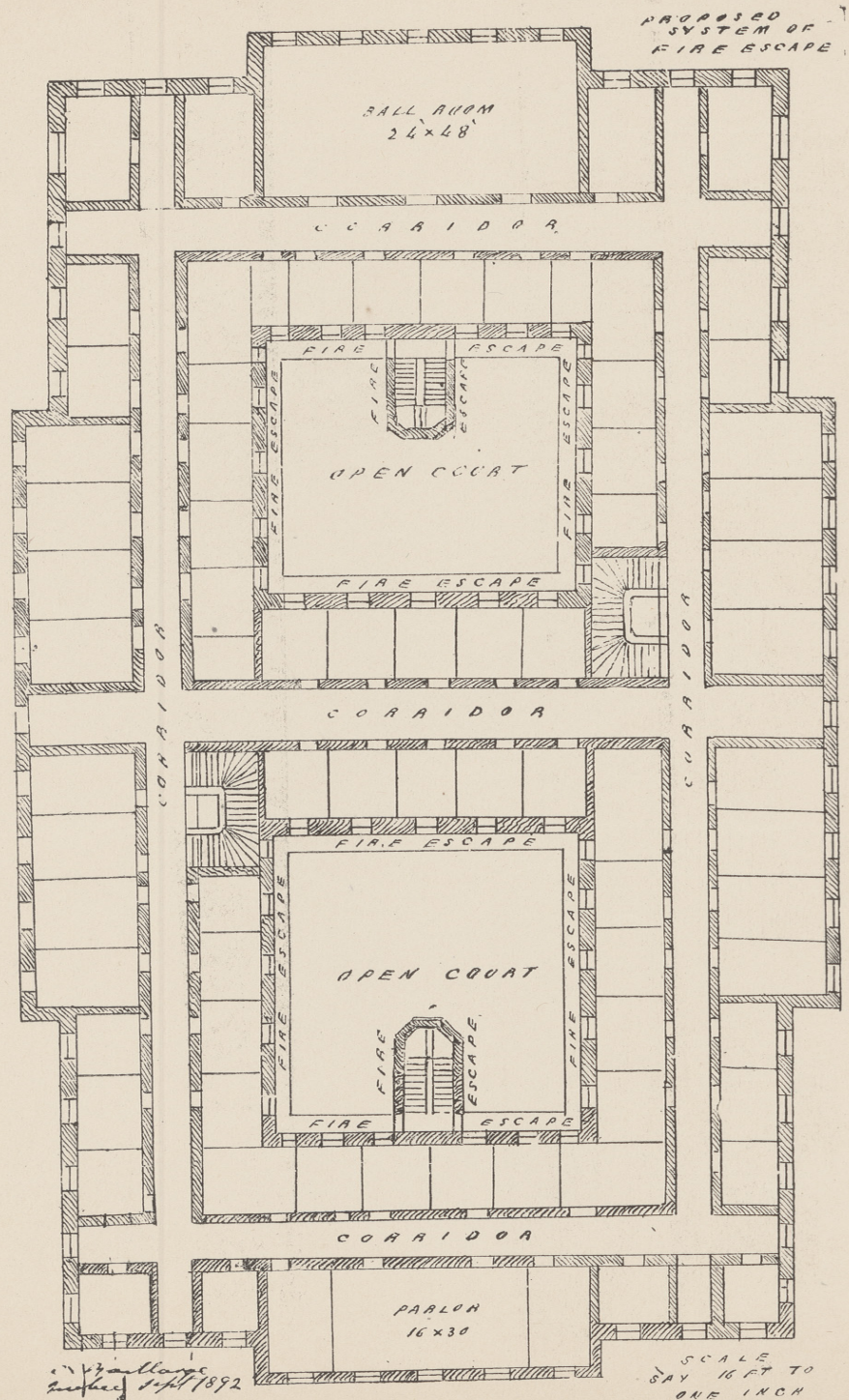
The product of the Ontario drain and sewer pipe factories for the last year is valued at \$360,000.



HOUSES ON SYDENHAM STREET, TORONTO.

HENRY SIMPSON, ARCHITECT.

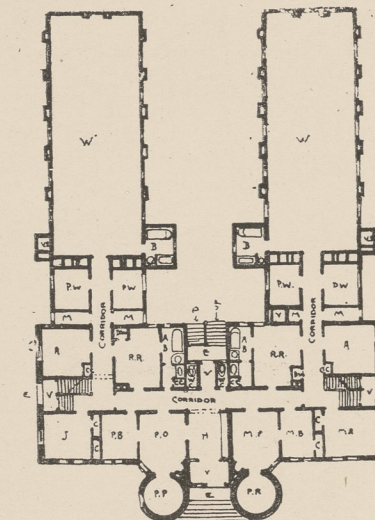
A. Allward, Del.



ILLUSTRATIONS ACCOMPANYING MR. CHARLES BAILLAIRGE'S PAPER ON "ESCAPE FROM BUILDINGS IN CASE OF FIRE," IN THIS NUMBER.

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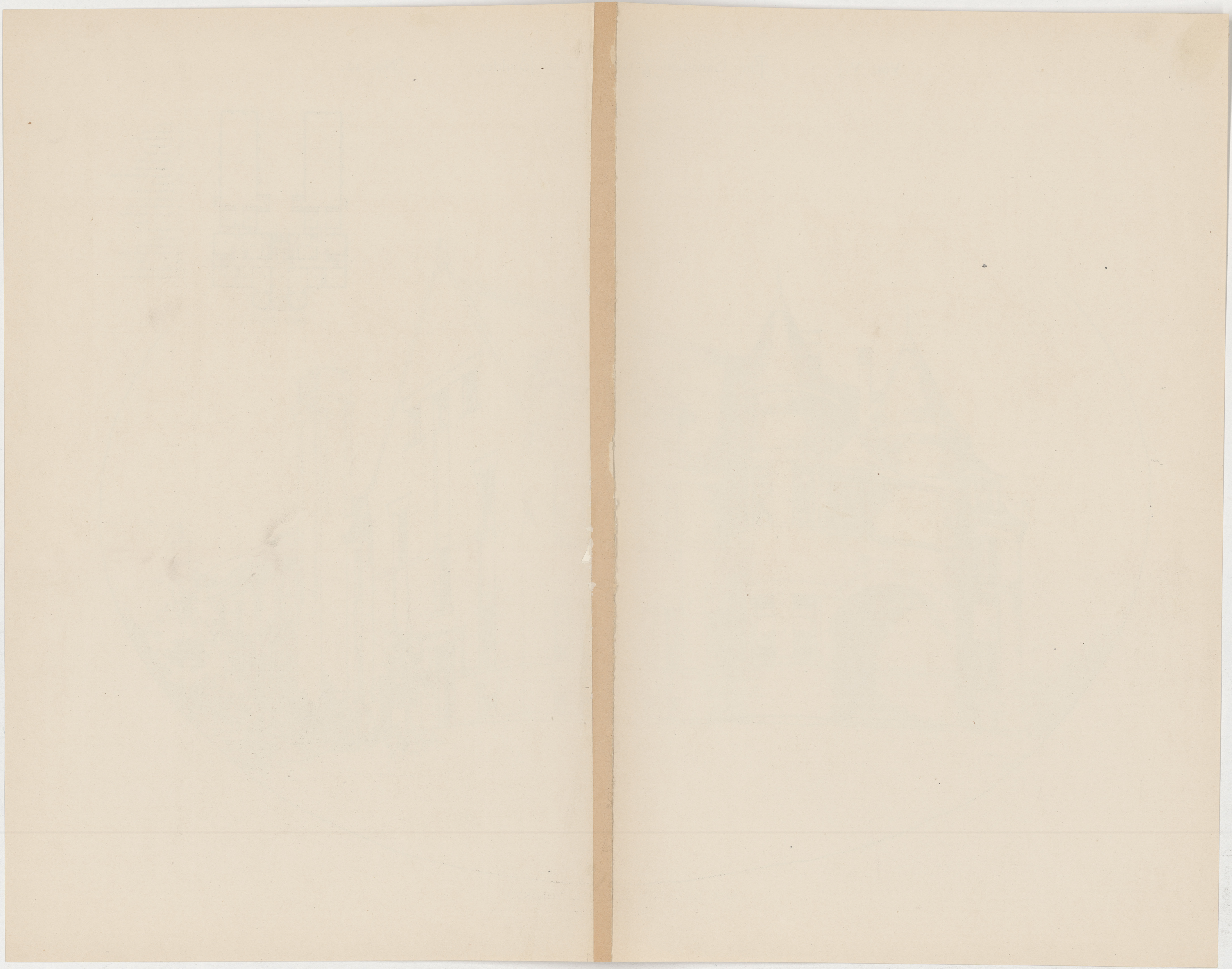
- W. WARD
- P.W. PRIVATE WARD
- B. PATIENTS' LAUNDRY
- A.S. ATTENDANTS
- V.S. VENT. SHAFT
- M. MEDICINE CLOSET
- N. NURSES' BED ROOM
- R.R. PATIENTS' RECEPTION ROOM
- E. ENTRANCE
- J. JANITORS' BED ROOM
- C. CLOAKS CLOSET
- P.B. PHYSICIANS' BED ROOM
- P.O. PHYSICIANS' PUBLIC OFFICE
- P.P. " PRIVATE
- H. RECEPTION HALL
- V. VESTIBULE
- M.P. MATRONS' PARLOR
- P.R. MATRONS' PRIVATE ROOM
- B.R. " BED
- N.B. NURSES' BED ROOM
- S.C. SOILED CLOTHES CLOSET

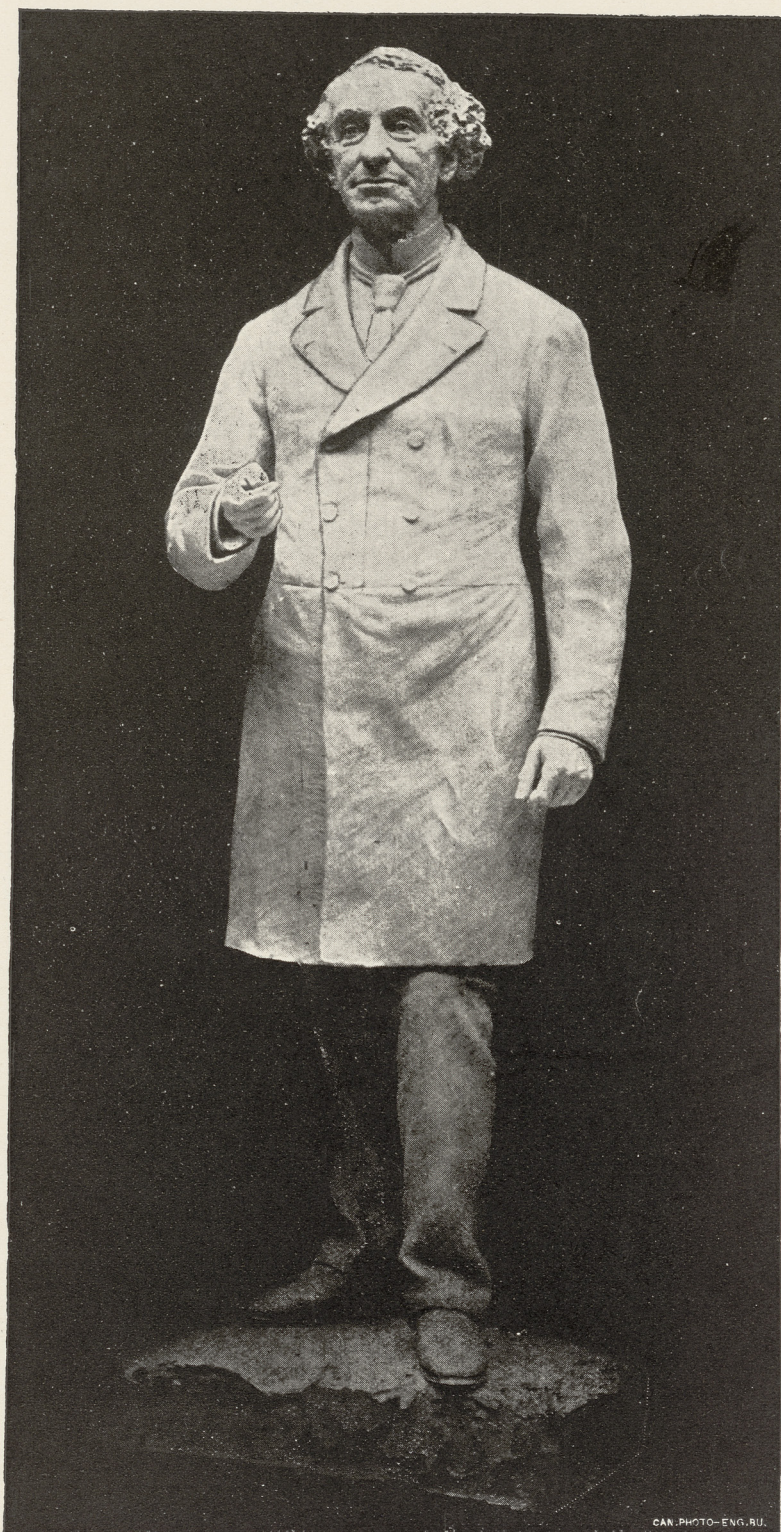
(P.O.) Floor Plan



NEW ISOLATION HOSPITAL, TORONTO.

HENRY SIMPSON, ARCHITECT.





STATUE OF THE LATE RT. HON. SIR JOHN A. MACDONALD,
TO BE ERECTED IN HAMILTON, ONT.
MR. WADE, SCULPTOR, LONDON, ENG.

CHARACTERISTICS OF ARCHITECTURAL STYLE.

BY G. F. STALKER.

(Continued from page 56.)

About the time when Solomon was in "all his glory" (although for the temple, his palace, and other buildings erected by him he had to go outside his own kingdom for his architects and builders), the various small principalities lying towards the south-east of Europe were gradually drawing together and being cemented into one nation. There were race distinctions among those people, strongly marked and even antagonistic, and so long as they remained apart from each other, the probability is that they would have become absorbed into one of the more powerful nations to the east of them, and so have lost their individuality or have lived their allotted time in this world in a condition of mediocrity. In any case they would, in all likelihood, have left no distinctive landmarks behind them. But after many bickerings among themselves, in which (like many other great nations since that time) they played a military game of see-saw, they found that they had so many interests in common, that by degrees they became fused together into one homogeneous nation. It was well for the world in general, and for art in particular, that this great event happened. The result of the fusion of the Hellens, the Spartans, the Dorians and others, has been a source of wonderment for the world ever since its accomplishment. Rapidly, as nations move, the principalities became unified, and then they seemed to be in a hurry to make an everlasting impression on the pages of the world's history; for, as Fergusson puts it, "all those wonders of patriotism, of poetry and art, for which Greece was famous, crowded into the short space of a century and a half, is a phenomenon the like of which the world has not seen before, and is not likely to witness again."

But, be the time of Grecian supremacy in the world long or short, this fact remains, that in Greece and that part of Asia Minor immediately under the rule of the Greeks, architecture reached its highest stage of development in ancient times; and, in what we call classic architecture, nothing has been produced since their time, which, for beauty, for purity, or even utility, can surpass or equal the works of the Greeks. That they drew largely from Egyptian and Assyrian sources for their designs is abundantly evident, particularly in their earliest works. But in their hands everything, borrowed from whatever source, underwent a process of improvement and refinement, so that when we come to the time when they were at the zenith of their power, they had created a style of architecture distinct from anything that existed before—peculiarly Grecian, and having in it principles upon which succeeding styles were based.

The Doric order (which was derived from an Egyptian source), was that most largely used by the Greeks in their temple and monumental buildings. At first they gave to its proportions more solidity and massiveness than was found in the Egyptian columns from which it was borrowed, and that to such an extent as to border on clumsiness. But such examples are so few in number, that we may conclude that they quickly saw their error and set about correcting it. At the same time they had no hard and fast code of proportions of the various parts of any of their orders by which they worked. The arbitrary rules which are sometimes taught in schools and academies as belonging to this and that order, were drawn up by Sir William Chambers on no higher authority than his own. But in the Grecian buildings still in existence, there are no two examples in any order which are in all respects, either as to proportions or detail, exactly alike. They have a family resemblance to one another and nothing more. It is acknowledged, however, on all sides, that the Parthenon is the most perfect example of the Doric order. And this building is so inseparably linked with Greek art that one never thinks of the one without the other coming to mind. In outline every detail is of the very simplest, and at the same time the most effective form, bearing to each other such admirable proportion that the whole is absolutely faultless.

But the Greeks did not depend on the strictly architectural features of the buildings alone for their beauty, for with their exquisite detail and perfect masonry they united the sister arts of sculpture and painting. Without these, indeed, their buildings would have been somewhat bald, and certain parts of them meaningless. But these arts formed an essential part of the design, and were intended to, and did, give life and dress to

what would otherwise have been very simple structures. Many of the ornaments which in some late examples were carved, were in the earliest buildings executed in color. The sculptures also were relieved by colored backgrounds, and the figures themselves were sometimes painted. It will thus be seen that a Greek temple, when first erected, required an harmonious combination of the arts of architecture, painting and sculpture, to complete the composition.

The Ionic order was less dependent upon sculpture than the Doric—that is to say, as far as the human figure was concerned. The form of the column was more attenuated and the whole entablature much compressed. The details were also more enriched by carving, and so the necessity for sculptured work was greatly lessened, or altogether dispensed with. In this order the columns are provided with moulded bases, and the chief features of the capital (as indeed, it is of the whole order), is its bold volute, which no doubt was derived from an Assyrian source. The same minuteness and elegance of detail, and the same finished masonry were used in this order as in the Doric, though it lacks that force and vigor which is so manifest in the latter.

Towards the decline of Greek art a third order, the Corinthian, became dominant, although it was never used in buildings of first importance. Its base was more elaborately moulded and its capital more richly carved than the Ionic order. Its entablature was also bolder and better suited to the introduction of sculpture.

Such are the three orders of Greek architecture which are easily distinguishable by their capitals alone. The Doric has a square cap or abacus, with a rounded moulding underneath it; the Ionic has the volute; and the Corinthian has the bell of the cap richly foliated. The poet Thomson in his "Ode to Liberty," says of Greek architecture:

"First unadorned
And nobly plain, the manly Doric rose;
The Ionic then, with decent matron grace,
Her airy pillar heaved; luxuriant last,
The rich Corinthian spread her wanton wealth.
The whole so measured true, so lessen'd off
By fine proportion that the marble pile,
Formed to repel the still or stormy waste
Of rolling ages, light as fabrics look'd
That from the magic wand aerial rise."

But besides the striking distinctions in the capitals of the three orders, it must be observed that the most characteristic feature of Greek architecture is that of horizontality. The general squareness observable in Grecian buildings gives an indication of strength and solidity; the long unbroken lines of entablature are suggestive of repose; while the mouldings, consisting as they do of a variety of flowing curves, soften the severity of the lines and add grace and beauty to the whole.

Though Rome was founded as early as the union of the principalities of Greece, it passed through several centuries of its existence before erecting any buildings calling for notice, or that in any way were distinctive as regards architectural style. Conquest and the accumulation of wealth seem to have been the motive power of Rome as a republic. During this time neither art nor letters received much attention or encouragement from this restless, fighting, conquering people. But after the great powers of the world had been subjugated, and made tributary to Rome—when she became the capital of Europe and mistress of the world—then during a period of comparative peace she became the lodestone that drew to herself all the learning and the art that had flourished in other countries. Art treasures in immense quantities, captured in her successful wars, were poured into her lap. Artists from Greece and Asia and Egypt flocked into the imperial city in great numbers, and then sprang up in rapid succession innumerable buildings of much larger dimensions, of more costly adornments, and for a greater variety of purpose than the world had ever known.

The claims of the business life of a busy people had to be considered, and so architecture spread its wings, and instead of being confined to temples, palaces and tombs, it took within its wide and friendly embrace buildings of every description. Baths, market-places, theatres, monuments, aqueducts, bridges, villas, gateways—anything in short that was built was by them treated architecturally. They seemed to consider that what was worth building was worth building artistically. Architecture

under the Romans was consequently more varied as regards its design, and more cosmopolitan in its application than it was in the hands of any of the nations before their time.

There is, however, less distinction between Roman architecture and Greek than there is between the latter and its antecedents. The same orders were used, but in an enriched form. The Corinthian order was certainly improved by them, and the composite order is, after all, only a modification of the Corinthian. To the Romans, however, must be accorded the credit of introducing the semi-circular arch both as a constructive and decorative feature. They were not the inventors of this form of arch, but they applied it in such a manner as to make it a characteristic feature of their style of architecture and explode the ideas that had formerly existed as to its structural soundness.

Just as the columns were enriched, so also was the entablature. Wherever carving could be applied it was done, and where color could be introduced by the use of precious stones or metals no other mode of coloring was adopted. From first to last experience was the order of the day at Rome. But in all their work there is a sort of manliness visible, and no problem of structural difficulty ever presented itself but to be overcome. Roman architecture has also this interest attached to it, that it broke away from the horizontal lines which had ruled in all previous styles, and established a point of departure which led up to the adoption of vertical lines as the leading principle in succeeding styles.

A REPLY TO MR. BOND'S LETTER.

Editor CANADIAN ARCHITECT and BUILDER.

SIR,—In reply to young Mr. Bond's communication of 22nd Oct. last, in reply to mine which you previously published, commenting on your correspondent's mis-statements, permit me to state that I, as inspector of Mr. Tuckett's building, *ought to know* when the carving was done on it, and I most emphatically deny that any was executed until long after your correspondent's spiteful notes had been forwarded to you.

Herewith I send you a tracing taken from the original drawing, and request you to submit it to the criticism of any architect to say if not only the skilled sculptor, but the merest schoolboy in architecture, would not be justified in holding it up to ridicule.

Yours, &c.,

JOHN WATSON,

Inspector of Buildings, Hamilton, Ont.

[As no useful object is likely to be attained by continuing this correspondence, we decline to allow it to proceed further.—EDITOR C. A. and B.]

"CANADIAN ARCHITECT AND BUILDER" COMPETITION FOR A CITY HOUSE.

THE CANADIAN ARCHITECT AND BUILDER invites competitive designs for a city dwelling, to cost \$15,000, and to be erected on a lot 30 x 125 feet. The lot will face the narrow way, south, long way, east. The main west wall of the building must stand on the party line between the lots, and the main east wall must come upon the street line. There is to be no enclosed area for lighting.

The building is to contain three clear stories above ground, to be constructed of stone, or of stone and brick, with sloping or flat roof. No overhanging tile or shingle work will be allowed.

The entrance may be on either front, at the option of the designer.

The number and location of rooms and the purposes which they are to serve is left to the judgment of the designer.

Competitors will be required to furnish plans of basement and three upper stories, and elevations of south and east front. Perspectives may be submitted at the option of the competitors. Floor levels must be marked on the side of the elevations.

This competition is restricted to architectural students and draughtsmen in Canada.

Drawings must be made on sheets of heavy white paper or bristol board, 14 x 20 inches in size, and must be drawn sufficiently coarse to allow of their being reduced to one-half the above size. Drawings must be made in *firm, strong lines*, with *pen and black ink*. No color or brush work will be allowed. Each drawing must be marked with the *nom de plume* of its author, and the author's name, *nom de plume* and full address,

enclosed in a sealed envelope, must accompany each drawing sent in.

Drawings must reach the office of the CANADIAN ARCHITECT AND BUILDER, Confederation Life Building, Toronto, on or before the 4th of January, 1893. The right is reserved of publishing any drawing sent in. Drawings will be returned to their authors within a reasonable time after the competition is decided.

The first premium will be \$15, and the second, \$10.

The merits of the designs will be decided by a committee composed of three members of the Ontario Association of Architects, and their decision will be final.

MONTREAL.

(Correspondence of the CANADIAN ARCHITECT and BUILDER).

It has been decided to hold monthly meetings of the Montreal members of the Province of Quebec Association of Architects. On the evenings set for the meetings the members will dine together at the St. Lawrence Hall, and go direct from thence to the meeting in the Association rooms on St. James' street. The first of these meetings took place last week, on which occasion a paper on "The Functions of Truth in Art" was read by Mr. A. T. Taylor, F. R. I. B. A. The reading of the paper was followed by an interesting discussion. It is the intention also to revive the classes for students, which were attempted to be established last winter. The Montreal members of the Association have evidently set their hands to the accomplishment of practical work on behalf of the Association and the rising generation of architects. They deserve and should receive the most cordial assistance of every member of the profession.

THE FUNCTIONS OF TRUTH IN ART*

The foundation of art to be enduring must be laid in what Carlyle calls "The eternal verities." Of these one of the greatest is Truth.

There can be no real permanent art without truth; and in all art there must be beauty, and these two are inseparably joined, for in all truth there is beauty and in the highest beauty there must be truth. If we study the great architectural epochs of the past we will find this truth recognized and given full expression to in their greatest and noblest memorials and achievements; and just in proportion as truth in construction and design was ignored so degeneracy in vigor and life set in. No nation and no individual can afford to neglect truth, whether in ethics, poetry or in art. It must be placed like a precious jewel in the breast-plate, unsullied and undimmed by compromises or subterfuges.

In painting—the most intangible of the graphic arts—the rules are somewhat less abstract and definite than in architecture and sculpture, but truth governs none the less. The great artist, to be sculptor, architect or painter, must be born; he is like the great poet, the great musician, the great prophet, he has a divine mission; profound thoughts have been whispered into his soul to deliver to his fellow men; and therefore, because we cannot always make them fit in with our preconceived ideas, we must not be too hasty in condemning them. Revelation comes to us with many voices, and thoughts in varied channels. Were these not in part sometimes incomprehensible to the average run of humanity, then would the artist not be worthy to be called "great" and become commonplace.

Nature is the fountain of art, the quarry from which art's achievements are obtained; but Nature has to be interpreted, and in the interpretations men may err. As miracles have been said to be not violations of natural law, but the action of a higher law of which at present we may be ignorant, so certain phases of art, although apparently not true to Nature as we see it, may be entirely in sympathy with the deeper truths of Nature that we ourselves may not, as yet, have discovered and appreciated. Truth on its finite side is not absolute but relative, and therefore pre-Raphaelitism, Romanticism, Impressionism and many other isms have visions of truth in them important for mankind to know.

A picture may be truer to Nature and give one the very spirit of the scene although, probably, it may be a poorer imitation of the features of the landscape and of the ordinary color, than one which may be very correct in its lineaments and chromatic scale. Turner in many of his pictures took great liberties with Nature, but he has given us such an insight into the versatility of Nature, such atmospheric effects, such luminousness, and such a revelation of possibilities, that no one that I know of has ever surpassed and few equalled.

Have we not all seen a portrait in which all the features were correctly drawn and yet the whole effect wooden and inexpressive, and have we not seen another, it may have been but a rapidly dashed off sketch, roughly done, and perhaps not very correct in drawing, yet because there had been caught the spirit of the man, some special characteristic—THE MAN, not the outer shell—we felt at once it was the truer and better of the two. Truth is not merely imitation; were this so, then photographs as being most nearly correct transcripts of Nature would be the best and would take the place of paintings. Even leaving out the question of color you expect something more in a picture than in a photograph. You all remember the well known story of Zeuxis and Parrhasios who had entered into a friendly competition to paint the best picture; Zeuxis painted a bunch of grapes which looked so natural that the birds came and pecked at them, and when he called on his rival to draw aside the curtain to show his picture the found that the curtain itself was the picture. Zeuxis confessed himself beaten,

* Paper read by Mr. A. T. Taylor, F. R. I. B. A., R. C. A., before the Montreal members of the Province of Quebec Association of Architects.

saying, "I deceived the birds, but you have deceived an artist." You also remember the story of the painting of the fly by young Giotto on the nose of a figure his master was painting, which was so lifelike, that to the delight of the pupil, his master tried to brush it away with his hand. Mere imitation, however clever, is not the highest form of art, it is a trick that can be learned, but it is the mind of man impressed on the canvas that gives it value. By some strange perversity we have rigorously demanded Truth in speech and action but allowed it sadly to go by default in art. The need of truth in art is paramount and I should like to emphasize it still more and say that art will flourish first in proportion as faithful and honest methods are employed and truthful and honest thoughts impressed on the work.

Art in all its phases should be interesting to us as architects; as I hold very strongly that an architect should be an artist as well as a constructor; but it is natural that it should be of special interest to us in its relation to architecture and the applied arts. In everyday art this question of Truth presses most closely to us. Our houses, our streets, our surroundings, are with us all the time and unconsciously influence us; and if these are not instinct with truth we shall make our own Nemesis to bring on our own punishment? I am happy to think that the crusade against shams, largely influenced by the powerful and brilliant writings of John Ruskin, has resulted in the abolition of many of the worst, but they are hard to kill, and too many are still left to us and need rooting out also. It seems to me that a fundamental rule is this: Always let a thing look what it is, and do not make it try to look like something else. Iron and steel are great friends to us, but they have often turned to be our enemies, by reason of our inability to use them rightly; and, I am sorry to say, they are responsible for much questionable work; the facility with which we can bridge wide spaces, carry heavy walls over voids, and generally disregard the disposing of walls, piers, etc., above each other, has led to the violation of some of the elementary principles of construction. We have also to thank the same material for making it possible to construct those enormous lofty buildings in which Chicago has the unenviable notoriety of taking the lead. I cannot but think that these will be, before long, come to be looked upon as stupendous blunders; the utter disproportion of scale and mass to their surroundings, the fatal disturbance of harmony and proportion to the environment, to say nothing of the disturbing sense of feeling that what is visible of the slim, lower stone and brick piers, is manifestly and apparently inadequate to support the enormous superstructure without the aid of iron or steel supports behind the piers. In many modern buildings the outer walls help little in the construction, and are merely enclosures and could be removed without affecting the stability of the floors or roof. I cannot but feel there is a grave danger looming ahead for many of the skeleton framed buildings in which the iron or steel uprights are built into brick-work for fireproof purposes, and when in time rust and decay will set in without the possibility of detecting or remedying it, until it makes itself known by sudden and fatal failure.

In speaking of Chicago one's thoughts involuntarily turn to the White City which has been rapidly rising in its midst for the World's Fair. The material called staff, made of plaster, jute and water, which has been employed for most of the exterior, has proved such a pliable and adaptive material for temporary work that there is a great danger that it will be adopted for more permanent structures, and just as we are congratulating ourselves that we have got rid of "compo" and stuccoed fronts, which so long held horrid sway, to the utter degradation of all true art, we will be threatened with a return of the old pernicious and objectionable material, only perhaps a little better in quality. We have to guard against the lack of truth in construction and in outward finish. If we can only afford to build a common brick house let us try to bring out the utmost capabilities of the material in simplicity, and not cover it with plaster and line it to look like costly stone, until the miserable subterfuge is evident when the plaster begins to fall off. If a plaster finish is desired, then let it be treated as plaster, and stamp patterns upon it or leave it rough cast and honest, but do not try to make it look like stone when it is not.

Motives of economy and narrowness of view on the part of clients have been to blame I am afraid for the extensive use of galvanized iron in cornices and such like—so detrimental to the dignity and truthfulness of a building in the long run, and it is for each of us to consider seriously how far it is right for us to pander to this. It is a phase of architecture largely peculiar to Canada, and hardly one that we would care to proudly hand down to posterity as our contribution to a noble national style of architecture. If we cannot afford doors of hardwood, let us have them of pine, honestly varnished or painted, but do not let us grain and paint them to imitate oak or mahogany or maple. A thousand times better to have a plain thing that is honest and truthful than an elaborate thing that is a lie. No true art can exist where such things prevail, and we must remorselessly root them out. Until quite recently the grained roof of Milan Cathedral was painted with imitation tracery work to look like perforated stone, and deceived many people. Within the last two or three years, however, this deceit has happily been painted out, and it is the intention to decorate it with frescoes of sculptured subjects in an honest genuine manner.

At Abbotsford, Sir Walter Scott had his paintings fixed to the walls and frames painted round them with sham mouldings and ornament, shaded to imitate relief work, and this is a very common form of deceit. You will see it even in churches, where surely, if anywhere, truth should be absolute in its sway. There may still be seen entrance halls and staircases of some houses, the halls hung with papers to imitate marbles of all colors and kinds—Siena, dove, purbeck; generally, part of it is coming off and revealing

the paperyness of the sham, and there may also be seen papers to imitate different kinds of wood and which I regret to say may even be bought in the market to-day. Surely in this age of pretty wall papers and artistic designs such poverty of invention, to say nothing of the deceit, is indefensible. It is not so long ago since it was a common thing to break up a blank wall by putting in sham windows and painting on the sashbars and glass, and I have even seen fancy blinds painted on. And such was the rage forty or fifty years ago for uniformity, that if a house required a wing on one side, a similar wing had to be put up on the other, even although it was only a thin sham wall with nothing behind it. Some of you may have seen imitation colored glass made of paper which was intended to be pasted on to the ordinary glass of a window to make people think it was stained glass. These may be thought trivial details, but I hold no details to be trivial, and although we may not bow down to falsehood in that form, it is so hydra headed that other heads of deceit will arise in other forms to gain approbation.

Truth demands that in all design the nature and character of the materials to be used should be considered, so that the inherent quality of each should be brought out in the design. Let what we have be simple or expensive, but let it be at least what it pretends to be, and if at the same time it is good in design, then we can safely take pleasure in it with a good conscience. Nothing is too trivial for truth to hold sway. It should permeate down to the smallest detail. A great writer has put this admirably, yet not too strongly. He says: "Nobody wants ornaments in this world, but everybody wants integrity. All the fair devices that ever were fancied are not worth a lie; leave your walls as bare as a planed board, or build them of baked mud and chopped straw if need be, but do not roughcast them with falsehood." Very subtle forms of falsehood are creeping in under the guise of artistic effect. In the States especially you will see new houses built to look old, with the stones purposely chipped and broken and made to look weather-beaten, so as to give to a new house the effect which has only been put daintily and lovingly on by the finger of Time on an old one, after perhaps a century or two of caressing. It has affected modern draughtsmanship also, for new houses and buildings are delineated as if they were ruins crumbling into decay, and fictitious aids are freely sought after to enhance effect.

If honesty and truth could but pervade the execution as well as the design of our architectural and engineering works how many accidents and lives might have been spared. Every week, I would almost say every day, accidents happen from dishonest and faulty workmanship—vessels lost at sea, trains wrecked, bridges giving way, houses falling. But this faulty work is not confined to modern times; recently, the ancient central tower of Peterborough Cathedral showed signs of failure, and it was found necessary to take it down and rebuild it. In the process of demolition it was found to the amazement of everyone that the piers supporting the towers were only composed of a skin of good masonry and that the inside was filled in with rubbish. Surely the jerry builder has been an institution in all ages! Examples could be multiplied indefinitely, but enough has been said to make my meaning clear, I think. Entire honesty and thoroughness in everything is what is wanted, not only in what will be seen but also in what may not be seen. It is an old saying, "The Gods see everywhere."

I would close by quoting a sentence from an address delivered by Gounod at the Academie des Beaux Arts in Paris a few years ago. He says: "Art reposes in Truth. Wherever Truth is ignored and violated there begins or is accomplished the work of disintegration or death. Serve Truth. Truth alone gives stability and liberty. Serve her generously, valiantly, nobly. Yield yourselves to her. She is so divinely grateful that she will pay you a hundredfold the battles fought for her."

THE R. C. A.

At a meeting of the council of the Royal Canadian Academy recently held in Toronto, the following committee was appointed to select pictures from the exhibition to be held in Montreal in February, and if deemed advisable to select works of art by Canadian artists generally, to send to the Canadian fine art exhibition at the World's Columbian Exposition, Chicago, which will be opened May 1st, 1893, viz.:—Mr. Robert Harris and Wm. Brymner, Montreal, and Mr. Homer Watson, Doon. Mr. Robert Harris was chosen to hang the pictures selected. Resolutions of sympathy were passed to the widows of the lately deceased members, W. G. Storm, architect, and Paul Peel, the artist.

It is the intention of the academy to make as good an exhibit of Canadian art at Chicago, as can be got together. The Dominion government has agreed to pay the expenses of the exhibition.

TORONTO ARTS STUDENTS' LEAGUE.

A very successful exhibition of recent work of the members was given from the 5th to the 10th inst., in the League rooms, Imperial Bank building. The exhibit spoke volumes for the industry of the members and likewise displayed a marked improvement in skill. A further reference to this exhibition and to the work of the League will appear in our New Year number.

ODDS AND ENDS.

IN erecting office buildings and other similar large structures the most difficult problem in general is that of adequate light, without considerable sacrifice of space. By using here and there thick pieces of glass, set in light iron frames, for floors, some of the difficulty is removed, but there are always some rooms that depend upon reflected light. The office room in which this item is written has large windows, but blank walls only a few feet from them so that very little light comes into the room direct from the sky. It was originally intended to cover the walls referred to with white glazed tiles, but this was not done because of the high cost. It does not seem to have struck the architect or owner that almost the same result might be obtained by giving the walls a liberal coat of whitewash about once a year. The expense would be comparatively small while the reflection of light from the white surface almost equal to that obtained from glazed tiles. Another means for reflecting light in dark rooms that is extensively used in office buildings in England is the mirror reflector. This consists of a mirror plate, finely corrugated on the surface and set in a strong wooden frame. It is hung on the outside of the window, the top being inclined at a proper angle to throw light into the room. As a rule the reflector is supported at the bottom on pivots, held in place by means of iron brackets secured to the window frame, while the top is supported by iron chains. The surface of the plate being corrugated, the light thrown into the room is well diffused. The writer has seen cases repeatedly where rooms in which it was necessary to burn gas all day were rendered light enough for all office purposes by means of these reflectors placed at each window, the reflectors being assisted by the walls and ceilings of the room, which were papered with very light satin wall paper.

* * *

To properly specify for the finish of hard-wood floors sometimes puzzles architects. The writer has seen several coats of raw linseed oil called for, when to use such would produce very unsatisfactory surfaces. One of the best ways to finish floors of this kind is to first give a coat of hot linseed oil, liberally mixed with dryer, then rub in paste filler and clean off in the usual way, taking care to leave the surface free from excess filler as far as possible. Now apply a coat of light shellac, sandpaper lightly all over, and putty up the holes and defects with a putty carefully colored to match the wood; then apply two or even three more coats of shellac and lightly sand paper between each, and finish by rubbing to a dull polish with crude oil and powdered pumice stone. An oak floor finished in this way will last longer than a finish by any other method, and very much longer than when finished with wax. Some painters would be inclined to omit the hot oil before applying the paste filler, but it pays well to use it, as it forms an excellent foundation and gives a durability to the floor as a whole.

* * *

Canada is fortunate in having upon its statute books a law regulating the sale of white lead which practically insures that pure lead shall be used when specified. The fact should not be lost sight of, however, that something more than purity is required in white lead; whiteness and fineness are very important qualities, and it is well known that there is almost as much difference between the various brands of pure lead as there is between chalk and cheese. The color of white lead may readily be tested by placing different samples side by side, when the whitest sample will be readily distinguished. It is not a bad plan to have a sample of zinc also; the zinc being a much purer white than even the whitest white lead ordinarily sold, gives a sort of standard and indicates at a glance how yellow the commercial white lead is. To test the fineness of white lead is not a difficult matter: Thin it with turpentine and spread on glass, brushing out as smoothly as possible, using a separate sheet of glass for each sample, and taking care to thin equally. This can be done by weighing the sample of lead and measuring the quantity of turpentine used in each case. When the glass is painted and is quite dry a comparison between the samples will show the relative fineness at a glance, while if the finger be drawn across the surface, the difference in fineness will be further perceptible. This glass test will tell something about the whiteness also.

There are few things more annoying in connection with store fronts than the condensation of moisture on the glass that so frequently takes place. Not only does the water run down and spoil the goods placed in the window, but it obscures the view and renders the window to all intents and purposes useless. There have been various means for curing the trouble patented, but none of them has met with very great success. No store front should be built without an open grating at the top to permit of a free ventilation, when this is provided there will not, as a rule, be much accumulated moisture. In case of existing store fronts where it is desired to provide means for ventilation, a piece of glass should be cut away and a revolving brass ventilator inserted, or a strip of glass may be cut away from the top of the window and two or three strips of glass held at the ends in a metal frame and arranged to lap may be inserted so as to form a glass shutter that can be open or shut at will.

ESCAPE FROM BUILDINGS IN CASE OF FIRE.*

BY CHAS. BAILLAIRGE.

Having been invited by your Secretary, Mr. Hutchison, to read a paper on some subject connected with the profession, I do not think I can hit on one more utilitarian and really important than that of "Evasion in Case of Fire."

For the last 30 or 40 years we have been endeavoring to erect "fire proof" structures, and great strides have been made towards the solution of the problem. Repeatedly has it been asserted that such and such a building was or might be considered absolutely fire-proof; and as often has each and everyone of them come to grief, generally with much loss of life, whenever taken in hand by the devouring element. As recently as last year did I see a list of some 28 theatres and places of amusement destroyed by fire in different parts of the world in a single month; and one can hardly, on any day of the year, take up a newspaper without the recital of some frightful accident, some holocaust due to the destruction by fire of a manufactory, a college or a convent, theatre, hotel, asylum and the like.

The motto used to be, "All brick and iron," or "Nothing but brick and iron," but that error has been exploded by the repeated failure of structures so built, where it is found that cast iron columns snap like glass when, after becoming heated by the combustion of the furniture and stores within the building, a jet of water from a fire engine happens to strike them; while wrought iron columns, joists and girders also fail, by warping and distortion; and it is now incontestably admitted on all hands that cast and wrought iron columns, beams, girders, etc., can only be used and relied on to stand in case of fire where they are enclosed in brickwork, or thoroughly enveloped on every side with terra cotta or some other refractory substance of the kind; and hence the philosophy nowadays of erecting buildings composed of a skeleton frame work of wrought iron or steel encased in brick work—the iron affording the stability required while the brick work forms the protection against destruction by fire.

It may be considered practically impossible to render buildings of all kinds absolutely fire-proof, or to the extent of preventing at least their partial destruction. We cannot, for the sake of an eventuality which may never occur, render ourselves uncomfortable and miserable for a whole lifetime by resigning ourselves to tread on cold stone, cement, tile or other forms of incombustible flooring. We cannot make up our minds to the lifelong handling of cold and heavy iron sashes, shutters, blinds and doors. Floors in our dwelling houses and our schools, and in the bedrooms of hotels, etc., must still for health and comfort continue to be made of wood. You cannot have your little ones trot around in their bare feet even on so cold a floor as oak, merely for the sake of its slow burning qualities. And, independently of the effort and fatigue of handling iron doors and casements, look at the cost of them as compared with wood: the first cost and then the subsequent one of repairs; for buildings must in future settle and subside unequally, and what will cost you a cent to chip and shave a wooden sash or door to make it fit, would cost a dollar if it were iron; to say nothing of the fact that the iron sash, the folding casement more especially, could hardly be made so close a fit against the entrance of cold air, and, therefore, not so comfortable.

The treads of stairs, if not the carriages, must in dwelling and tenement houses and whenever carpets cannot be afforded, continue to be made of some such non-conducting soft wood as pine or hemlock, spruce or balsam, where you can use your bare feet without the danger of taking cold as when walking over oil cloth. Our tables, desks and chairs must continue to be made of wood, for who can submit to constantly touch or come in contact with metallic surfaces without untold annoyance, discomfort and ill humor. And so must our couches, our sideboards or buffets and our bedsteads be made of wood, were it only for the fact that a wooden bedstead can be bought for \$2.00, while an iron one costs five times the amount. Nor would any adequate advantage be obtained in the use of iron chairs, if they could be made as cheap as wood; for, as no one could use such, so to say, freezing or heat abstracting seats, they must be suitably upholstered or cushioned. So would couches have to be if they also were of metal.

Now, since all buildings used for residential purposes, as dwelling and tenement houses, convents, schools and colleges, hotels and places of public resort and amusement must, therefore, have wooden floors, wooden

* Paper read at the Third Annual Convention of the Province of Quebec Association of Architects.

doors and sashes, wooden furniture, and, as in the case of hotels, etc., thickly upholstered furniture, curtains, portieres, carpets, matings and the like, it follows that, even if in other respects fireproof, that is, if the building be indestructible by virtue of its iron joists and concrete floorings, its brick partition walls and iron roofing, still does it and must it contain a large amount of combustible and smoke producing material, and the gases more than enough when ascending from one single lower floor or story to stifle all the inmates of the floor above. The smoke and heated gases from below will immediately ascend through every stairway, through every elevator or sliding cupboard, through ventilating and hot air or hot water flues, or recesses in the walls. They will follow up along and through the holes made and left by plumbers around soil and sink pipes, electric and other wiring, and they must be counted on as surely as the fact that they cannot be excluded, eliminated or got rid of.

It follows that as no one can face such smoke and heated air or gases for more than a few seconds at a time, without the risk of choking, the way out of the burning building must be immediate. To have to grope through a long and maybe winding corridor to reach a fire escape at the end of it is inadmissible, impracticable. No one can stand the smoke for a sufficient length of time to do so. The fire escape must be at hand. It must be everywhere, with nothing more to do to reach it than to step over your window sill on to an adjoining balcony, or, in the case of a person occupying a front room in a hotel, cross the corridor into and through the rear room opposite and through the window thereof on to the said balcony leading to the fire escape stairway. There is no other possible certainty of escape than by the means I propose. Portable fire escapes may be and have been efficient in cases of private residences, or buildings where there are only half a dozen or a dozen people to be saved, the brigade having time to mount the ladder and make as many trips up and down as there are human beings to remove before the fire gets sufficient headway to render escape impossible by that means—but many impediments exist nowadays to the free use of the fireman's ladder, such as lines of wire and cables for telegraphing, telephoning, electric lighting, and electric transit, and oftentimes the ladder cannot reach the higher upper floors or stories.

Elevators cannot be relied on for evasion in case of fire, as, though the car and its surroundings be thoroughly fireproof and the fire or flames cannot travel through them from one floor to another, they act as chimney flues, the smoke and heated air rising through them to the exclusion of any possibility of escape in that direction. The iron stairways stipulated in the Boston and New York fire acts are no better than the elevators just alluded to, except that until invaded by smoke and hot air from a fire below, a larger number of inmates might pass out in much less time, than by the comparatively slower elevator process, due to the necessary intermittency of its trips up and down.

Fire escape ladders attached to outer walls are now to be found in very many instances, and it is unfortunate that we attach too much importance to their existence and seem to think that provided buildings have such ladders all is right and safe. Now, this is in most cases quite the contrary. Such ladders are no doubt of some use to able-bodied men and women, but of what use, let me ask you, gentlemen, is such a ladder to a child, to a young and delicate female, to an old man or woman, to an infirm person, even if it could be easily reached from any part of the building, which it never is and never can be, since, as before stated, no man, woman or child can before being stifled reach such a ladder through a long and winding corridor. Again, there are those who, though otherwise able to take care of themselves, become dizzy and helpless the moment they look down from any height, as from the upper floors of a building, and to whom the ladder would also prove useless. For a factory, no doubt, a ladder may answer, as the inmates are all able-bodied persons; but what about an asylum for the old and infirm, what about a convent, a college, with dormitories generally in the attic or upper floors, the other stories being used as class rooms, etc.; what is to be done in the case of a hotel with bedrooms in the upper flats and not extending below the third.

I think I may be allowed to say in my own name and in the name of the whole profession that nothing but a regular and commodious stairway can be considered safe under the circumstances, and this stairway must have no direct communication with any part of the building from which escape is to be had. This is imperative, and a *sine qua non* of the absolute safety of the proposed system: for, as already stated, if the stairway to be used as a fire escape does communicate with the building or apartments to be subserved, and if any one of these apartments be on fire, the ascending column of smoke and heated gases will effectually prevent escape in that direction. The communication must be indirect, that is, it must be from the building to an outer landing and from the latter to the stairway, thus preventing the possibility of the existence of any current through the shaft capable of drawing the smoke and heated air into it.

Now, the proprietor of the hotel, if it be one, will not (you may take your oath on it) for the sake of an eventuality which may never occur, deprive himself of a single foot of otherwise available space within the walls of the buildings; and if the stairs were built within the building, and taking up, as they would and must do, the space of an ordinary upper floor bedroom, that is one room on each flat or 5 to 6 rooms in the total height, the scheme would be objected to and no proprietor might be found to carry it out. And not only must no otherwise available space be devoted to the purpose or sacrificed as it would be said to be, to a doubtful eventuality; but neither would the manager of the establishment allow of any of his arrangements or requirements being sacrificed in the premises. None of the communications from one apartment to the other on the ground or any other of the floors of the edifice must be in any way impeded.

In the case of all buildings with interior courts for light and air the proposed fire escape stairway must, as shown on the accompanying sketches, be erected in the rear of the building, where it can be done inexpensively of 12" or even 8" brickwork, instead of towards the front where it would have to be made an architectural feature of the building and, therefore, ten times more costly than where proposed, as in such case the galleries would also have to be made architectural features of the design and so much more costly on that account. The stairway being in the rear, and as, to render escape effective and complete, the front or open must be reached, then must a corridor be made right through and through the building, and this corridor must be fireproof to be of any real use; and to be fireproof it must be like the stairs themselves, cut off from all possible communication with the remainder of the building, or in other words there must be no other door or opening into it or leading from it than the doorway from the foot of the stairs towards the rear and the door at the front or the outer end of it. This corridor should be situated at ground floor level, the level at which the inmates must escape into the adjoining street. But this would cut off communication between those portions of the building on either side of the corridor. No other solution, therefore, presents itself than that of elevating the corridor to a height sufficient to pass under it.

Now, we all know what a mezzanine is, or an *entre sol* as they call it in France. This mezzanine or dwarf story has a most important function to perform by being taken in or left out to suit. For instance, say the clear height of the first or main story of the building, whatever it may be, is 18 or even 17 feet. This may be divided into a 9 or 10 ft. and a 7 ft. story with an allowance of one foot or less in height for the floor between the two, and while the entrance hall or vestibule, stores, dining, meeting and other large and important rooms on said first floor would be made of the full height of the story, or 18 feet, other rooms for secondary purposes and of smaller dimensions would only be made say 10 ft. high with a 7 ft. mezzanine above them, to be devoted to servants' bedrooms and other domestic purposes with convenient stairs for access to them here and there. Through this mezzanine or *entre sol* would the fireproof corridors therefore pass, as shown in section, and thus the proposed system of fire escape becomes complete, certain and effective, without the possibility of giving rise to one single complaint on the part of the proprietor, tenant, occupant or manager of the establishment; for an inspection of the plan and section will show that from every story of the building above the 1st from which escape can be had direct into the street, flight will be simultaneous and, so to say, instantaneous, every occupant of a rear room stepping out direct over his low window sill into a narrow iron gallery (of open lattice work, not to interfere with the light below) communicating with the stairway, while each occupier of a front room has merely to cross the corridor and pass through the room opposite his own to get access to the gallery staircase. There can be no jamming of the occupants of one floor by those of another, for since the exit from the room is simultaneous on each flat the occupants thereof will be simultaneously or at the same time descending their respective flights of stairs.

It only remains to say that in the case of a church or place of worship, a music hall, a theatre or circus, with more than a single tier of boxes or galleries, the fire escape galleries or balconies must of course be towards the street or open, in which case they would be made ornamental features in the design, as in the new theatre at Antwerp in Flanders where to each of the tiers of boxes there is an outer gallery or a balcony continuous around the building and 25 exit doors to each story with stairs descending from the fifth tier to the fourth, from fourth to third and third to second, whence the last flight of stairs or that to reach ground level is temporarily suspended to preclude entrance to the buildings and released in case of fire by merely pressing the foot upon a spring.

Now, gentlemen, you will be naturally curious as to the cost, that is, the additional cost of carrying out the scheme, and to leave no room for doubt in the premises I annex an estimate thereof, founded on a closely detailed calculation of all the quantities, where on cubing the building at only 10 cents a foot we get say \$160,000 for a hotel 200 feet by 100 feet and 100 feet in height or five stories, exclusive of basement and attics or mansard story (7 floors in all). The fire escape, including, as already set forth, iron galleries around each of the two inner courts, one to each story above the first or main floor, with two stairways, one to each court and corresponding fire proof corridors and stairs to street level, comes to \$6,546 or very nearly 4 1/10 per cent. of cost of building. In the case of a similar building used for manufacturing purposes and composed of large apartments and where the furniture and upholstering being a minimum and the smoke from an incipient fire below much less in quantity and less intense, and therefore less hurry required in vacating the premises, the length of gallery to each floor might be reduced by half, which would reduce the additional cost of carrying out the system to something less than 3 per cent. of the cost of the structure.

ESTIMATED ADDITIONAL COST OF FIRE ESCAPE FOR ANY BUILDING CARRYING OUT THE SYSTEM.

Taking the building to be 200x100 ft. or 20,000 ft. area with deduction of two open courts of 40x50, we get net area of 16,000 ft., which into 160 ft. high, gives 1,600,000 ft. cube at 10cts = \$160,000.00.

FIRE ESCAPE.

Girth of courts, 180 ft. x 2 = 360 ft. x tiers = 1800 ft. lin. iron balcony 2½ feet wide (see detailed estimate of ft. lin.) at \$1.85	\$3,330.00
Add cost of enclosure walls to stairs (see detailed est.) \$800 x 2	1,600.00
Add cost iron stairs (see also detailed estimate) \$315.00 x 2	630.00
Add cost of fire proof corridors through the building from rear to front (see detailed estimate on sheets of diagrams, \$493.00 x 2)	986.00
	\$6,546.00

not quite 4 1/10 % on cost of building.

LEGAL DECISIONS.

IN the case of *Rosebrough v. Eastwood*, recently tried in the Western Division Court, Toronto, the defendant, who was the owner of a house for the erection of which the plaintiff had been given the contract, was ordered to pay \$43, the full contract price, for work which had been rejected by the architects and replaced by another contractor.

MCKITTRICK v. PERRY.—This was an appeal by the defendant from the judgment of Judge Morson, judge of the county of York, given in favour of the plaintiffs in an action brought in that court and tried before the judge without a jury. The suit was entered to recover the price of a furnace sold to the defendant for the purpose of heating his dwelling; the defence being that the furnace did not heat the house, and there was also pressed a counter claim for damages by reason of the defective heating. Judgment was given by the junior county judge for the full amount claimed by the plaintiffs, with costs, and the counter-claim dismissed with costs. Appeal allowed; the plaintiff's action dismissed with costs; judgment entered in favour of the defendant for \$50 damages and the plaintiffs permitted to remove the furnace.

A case of considerable interest to architects and builders was recently decided in the county court at Winnipeg. In October last Mr. C. H. Wheeler, architect, sued Mrs. Joseph Wolf for commission in connection with the construction of her residence on Kennedy street. His original claim was \$241 and his suit was for a balance of \$161. Mrs. Wolf counterclaimed for \$1,000 damages on the ground that the stone foundation had not been built 18 inches above the sidewalk and \$100 further on account of defective work in the cellar. Evidence was submitted that the foundation was actually higher than the specifications called for. A number of witnesses testified that any damage caused to the cellar arose from the non-completion of the sewer on Kennedy street and the impossibility of getting rid of the water rising from the ground. The contract also provided that the cellar should not be completed until the sewer connection was made. Another point raised by the defence was as to the amount of commission to which the architect was entitled, the defendant and her husband contending that he had agreed to do the entire work for 2½ per cent. Professional evidence was given that 5 per cent. was the usual commission and the plaintiff and his son gave evidence that the defendant agreed to pay that amount. The jury gave a verdict for the plaintiff on both items of the counterclaim and for the full amount sued upon, less \$13.50. A large number of witnesses was called on the part of the plaintiff, including several builders and contractors, and the case lasted a portion of two days.

The case of *Pendarves v. Monro*, reported in the current number of the Law Reports, should be noted, though it does not lay down a new legal principle, but simply emphasizes and exemplifies one which has been for some time in existence. Article 41 of Roscoe's "Digest of the Law of Light" states that "when a right is claimed in respect of windows in a new building coincident, wholly or in part, with windows in an old building, the owner thereof must show clearly that the new windows are coincident with and contain the area of those which have acquired the right light." This principle was enunciated by, among other cases, that of *Fowler v. Walker*, and it is this principle which *Pendarves v. Monro* emphasizes. The identity of the old and new windows was not proved. "By reason of the omission," said Mr Justice North in his judgment, "to keep any plan, there is no evidence which satisfies me that any part of an old window can be identified with any part of an existing window." In the work from which an extract has been given, the author states in the note to article 41, that when a building is to be pulled down, a plan showing the position of ancient lights should be made and kept with the title deeds. The place in regard to which the dispute in this last case arose was in Sardinia-place, Lincoln's Innfields, and the old houses were pulled down in 1872: therefore, being buildings in the center of London, it was eminently desirable that plans should have been kept. The occupier of the building from 1869 to 1872 made an affidavit giving particulars of the old windows, and stating that he believed that the new windows "cover in whole or part the ancient lights." But, as we have seen, this was not enough,—the evidence was too vague. The practical result, therefore, is that without a plan it is almost impossible to establish a right to light in respect of windows in a new building which have not themselves acquired a right, but are alleged to have such a right in respect of old windows in a demolished building, with which they are alleged to be identical.—*The Builder*.

MANUFACTURES AND MATERIALS

BRICKMAKING AND BRICKBUILDING IN NOVA SCOTIA.

The extensive forests in this country, causing comparative cheapness of wood as a building material, has tended much to retard the general use of bricks in the construction of buildings, public as well as private. Outside of the capital city and a few of the larger towns, it is rare to find a brick dwelling; the few which may be seen are crude in appearance and entirely devoid of any ornamentation. The idea that a brick building can be made handsome in appearance, without the use of face or repress brick and stone trimmings, has yet to be developed.

Face brick commands a high price, and stone trimmings are expensive and beyond the reach of the ordinary builder. A prejudice also exists against brick amongst many, on the ground that a building constructed of this material is liable to be damp. This is owing to the hitherto defective mode of building, no air space being left in the outer walls. However, of late years, this factor is recognized, and almost any one now understands that a brick building can be rendered more comfortable for winter or summer use than one built of wood. Again, there are in the rural districts of the province very few skilled masons and no regular bricklayers. What we have are fairly good all round men; they will build a rubble foundation, lay a brick wall, or lath and plaster in a plain, unpretentious manner. It is quite easy, on the other hand, to find a carpenter skilful enough to build you a wooden house in the very latest improved modern style, and just as easy to obtain the manufactured lumber from the many sawmills, planing and moulding mills and sash factories to be found in any ordinary sized town. The tourist from your country, who, anxious to escape the siroccos of your heated cities, and lured by the many press notices this year of our country, to spend their vacation with us, have seen in our rural districts many dwellings which attest the skill and æsthetic taste of the worker in wood and the excellence of the painter's art.

Brickmaking in this country is only in its infancy. You can count the brick-yards on your ten fingers, and yet the country is full of the material for making red brick of the finest description. With two or three exceptions the operation of brickmaking is conducted by hand. The clay is mixed in an old-style pug mill turned by a horse, the bricks are struck by hand, laid on the ground to dry,—if it rains to be washed away,—hence the common brick are roughly made, as a rule, and utterly incapable of making a finished wall. The exceptions, where steam is the motive power, and brick machines used to strike the brick, are in this county, with one other yard I understand in Pictou County started this summer.

The brick made by the International Brick & Tile Company, whose works are situated here, are moulded automatically in one of Creager's machines, driven by a forty horse-power engine. This company makes only common brick, but their brick have such smooth faces and square edges that they are being used for some purposes instead of face brick. The clay on the property of this company is of a superior quality, entirely free from grit, and is taken direct from the bank to the pug-mill. When moulded, the brick are dumped on pallet boards and placed in racks to dry, this being the only yard in the province in which the bricks are dried in this way. In all the yards the bricks are burned in the old style of kiln. Wood is now used as fuel, and at present it is kind of cheap, but the time will come when coal must take its place. There is not a "Eudaly," "Hoffman" or "Perfect" kiln in the country. Time and again I have urged the management of the company with which I have the honor to be connected to investigate the merits of the new and modern mode of burning, as compared with the old and, in my view, expensive, wasteful and antiquated methods, but without success. However, as everything comes to him who waits I yet hope to see a modern kiln as part of our plant. No ornamental brick is made in the country, and as for terra cotta it is unknown. Pressed brick is made in some of the yards, but they are manufactured by hand machines of antiquated construction. I should like much to see a Raymond or some other of the repress machines with which your manufacturers produce the beautifully moulded forms of brick and terra-cotta shown in the catalogues I have seen, and embellishing your fine and artistic brick edifices. Speed the day when ignorance and folly shall give place to the beautiful and edifying, as well as useful, in the construction of our residences and public buildings. Then may we hope to see brick predominating in our rural settlements as the material of which to construct our dwellings, and such dwellings as shall combine art with utility, and which will not require constant repairs and the application of paint every now and then to keep up appearances.

To return, the Annapolis Valley, or "Evangeline's land," as it is now poetically known, contains vast deposits of argillaceous clay which becomes when burnt of different shades of red, from a bright toned terra-cotta to a deep cherry; just beside these deposits of clay are often found beds of sand sharp and fine, most of which can be used without screening. Moulding sand mixed with iron pyrites can also be obtained for experimenting in coloring, but usually with our clay it is not necessary. I have lately met with a description of kaolin which if properly treated, can be made into buff brick or terra cotta. It awaits only enterprise and capital to produce the manufactured article. We have the raw material, and the market will soon create itself. Our red clay, also, is suitable for drain tiles; being free from grit or stone, it can be easily worked through the tile machine. The market for this class of goods in a few years will be practically unlimited, as under-